PB-230 729

POLLUTION OF THE INTERSTATE WATERS OF THE GRAND CALUMET RIVER, LITTLE CALUMET RIVER, CALUMET RIVER, WOLF LAKE, LAKE MICHIGAN AND THEIR TRIBUTARIES. CONCLUSIONS OF TECHNICAL SESSION. HELD AT CHICAGO, ILLINOIS ON FEBRUARY 2, 1966

Federal Water Pollution Control Administration
Washington, D. C.

2 February 1966

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PB 230 729

Conference

In the matter of Pollution of the Interstate Waters of the Grand Calumet River, Little Calumet River, Calumet River, Wolf Lake, Lake Michigan and their Tributaries

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CONCLUSIONS OF TECHNICAL SESSION
FEBRUARY 2, 1966

FEDERAL WATER POLLUTION CONTROL ADMINISTRATION

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CONCLUSIONS OF TECHNICAL SESSION

In the Matter of:

Conference on the Pollution of the Interstate Waters of the Grand Calumet River, Little Calumet River, Calumet River, Wolf Lake, Lake Michigan and their Tributaries, convened at 9:05 a.m., Wednesday, February 2, 1966, at the Lincoln Room, Bismarck Hotel, Chicago, Illinois.

- - -

ATTENDANCE AT THE PRESS CONFERENCE

PARTICIPANTS

Murray Stein
Chief, Enforcement Program
Federal Water Pollution Control
Administration
Washington, D. C.

H. W. Poston
Regional Program Director
Federal Water Pollution Control
Administration
Chicago, Illinois

Blucher A. Poole
Conferee representing Indiana
Stream Pollution Control
Board

Colonel Frank W. Chesrow
Conferee representing
Metropolitan Sanitary
District of Greater Chicago

P R O C E E D I N G S

OPENING STATEMENT

BY

MR. MURRAY STEIN

May we get started?

I do think that we have achieved a remarkable breakthrough in water pollution control here now.

Before we get into the substance, I think we should for the record indicate the tremendous efforts made by the various people here.

On my right, of course, we have Blucher Poole of Indiana. Next to him is Mr. H. W. Poston of our office here, the regional program director with headquarters in Chicago. On my left is Mr. Frank Chesrow.

Mr. Clarence Klassen sat through all the sessions, but he could not be here today.

In addition to that, going through these negotiations while I was in the snow has been my long-time colleague and former Chicago citizen and member of the staff of the Sanitary District, Mr. Peter Kuh.

They say the mark of a good administrator is where someone delegates all the stuff and just has to look wise. In the last few days, in sitting around being

snowbound, that is just about what I have done.

In addition, I would like to call your attention to the Technical Committee. The members of the Committee were as follows:

F. W. Kittrell of our Department.

Dr. C. A. Bishop of the U. S. Steel Corporation.

H. H. Gerstein, City of Chicago Department of Water and Sewers.

Harold C. Jordahl, Department of the Interior, Madison, Wisconsin.

Dr. A. J. Kaplovsky, Metropolitan Sanitary District of Greater Chicago.

R. C. Mallatt, American Oil Company.

Perry Miller, Indiana Stream Pollution Control Board.

R. S. Nelle, Illinois Sanitary Water Board.

The alternates were as follows:

Grover Cook of the Department of Health, Education, and Welfare, who is our enforcement representative in Chicago.

Joseph L. Minkin of our Department.

Ross Harbaugh, Inland Steel Company.

James Vaughn of the City of Chicago Department of Water and Sewers.

Murray Stein

John Carr, Department of the Interior.

Dr. David Lordi, Metropolitan Sanitary District of Greater Chicago.

J. S. Baum, Cities Service Oil Company.

Benn J. Leland, Illinois Sanitary Water Board.

I read these names into the record to indicate all the effort that has gone into this. These people have met constantly. I would also say that the results achieved in no small measure stem from this Technical Committee and the Conferees.

The Technical Committee and the Conferees I think constitute as distinguished a board as I have ever seen on water pollution and on industrial matters. I think if you would go through the country anywhere and try to come up with a board as distinguished as that, aside from a few friends I see in the audience whom we left out, you could not assemble a better group than this. This is why I think these results were achieved.

This may be an indication of the magnitude of the problem from the standpoint of the State, the Federal government and the industry side. I think working in the Chicago problem we had the recognized top technical and professional talent in the field. So you can see you did have a problem, because this is where the people have

gravitated to.

I also do believe that we have achieved what many of us through the years sometimes believed was impossible. I think we got a major breakthrough, and we have achieved three things.

One, I think we have a program that will save Lake Michigan. It will save the lower end of Lake Michigan. It will clean up pollution in the Lake and preserve the water quality of the Lake for the maximum number of uses, present and future. This is a specter that has been haunting many of us for many years. I think we have a program that will do it.

Secondly, I think we have a program which will be accomplished in a reasonable time. Within a few years you will be able to see it -- in your lifetime and my lifetime I hope. I certainly think our children and our friends and neighbors will be able to enjoy it.

This isn't one of these long-range programs where the millennium may come and we all may see greener pastures. We're going to see our way to clear, clean water in the Lake and preserve that clear, clean water within a few years.

We're going to be so specific that the citizenry and the press and the industry and everyone can check on

us and see if we have done our job.

The third point is that I think the program is such that it can be lived with. This is a program which can be endorsed, as it has been endorsed in the Technical Committee, by the State agencies, by the city authorities, by the Sanitary District, by the Federal agencies, and by the municipalities and industries involved.

Now, not everyone is going to like everything in this program, but I think in view of this sort of complex matter this is really an achievement.

I think we also have two or three more generalized points before I go into the main part of the development.

One is that I don't believe we have had a more complex pollution problem anywhere in the country.

Secondly, because we were dealing with a resource like Lake Michigan, which is one of our great fresh water resources and which if it goes very probably could not be recovered, we had to be very, very careful and in many cases have had to make very exacting demands and ask for heroic efforts.

I think it is to the everlasting credit of the municipalities involved here and of the industries to recognize this, to recognize that we may be asking for

things to preserve Lake Michigan that possibly might not be necessary where you had a fast-flowing river, because if the Lake ever went we could never recover it. And I think they came across.

The third may be of interest to the professionals in the room. I think what we have come up with here in terms of a program may be the blueprint of what pollution control will look like throughout the country. I think because of the complexity of the problem and the necessity to do a job we have come up with answers which very well may be the bible for other parts. I wouldn't say they are going to duplicate this exactly, but I cannot see a solution to another pollution case or the development of standards, as we are required to do under the new Federal law, taking place without using what we have done here as the document to take off from.

Now, you will recall at the original conference held last March we had agreed that the municipalities should take immediate action to clean up pollution. Specifically, we said:

"The Indiana Stream Pollution Control Board, the Illinois Sanitary Water Board and the Metropolitan Sanitary District of Greater Chicago will institute immediate action in their respective jurisdictions that all

sewage receive at least secondary treatment plus adequate effluent disinfection within one year after the issuance of the summary of the conference."

The summary of the conference was issued April 14, 1965. The date here that we're going to check is April 14, 1966. Let's see how well we've done.

I think we have to in this aspect of the program, as well as in other aspects, give all credit to the tremendous help and cooperation we have received from Mayor Daley, from Governor Kerner and from Governor Branigin. I don't think without their help and assistance we could have moved this program forward.

I'm a "big city" boy, and I recognize how difficult running a city is. But with all his problems, Mayor Daley has never been too busy to give a sympathetic ear to this program and to help us move the program forward. I think without that we would not be so far ahead.

Now, what we are going to deal with here largely is the industrial waste program. May we have those sheets distributed, Mr. Kuh and Mr. Cook?

We have at the last conference established a schedule for municipal waste treatment. As far as I know, except for some specialized cases where there is tertiary treatment, this program we have for secondary

treatment and adequate disinfection of the effluent is generally about as high a regimen of treatment as you have from cities anywhere in the country.

The Conferees, as we agreed when we were here last, met in executive session on January 31 and February 1, 1966 and agreed to the following:

1. Based upon the report of the Technical Committee and review of comments submitted to the Indiana Stream Pollution Control Board, the Illinois State Sanitary Water Board, and the Metropolitan Sanitary District of Greater Chicago, the Conferees agree to the "Report of Water Quality Criteria, Calumet Area-Lower Lake Michigan," January 14, 1966 with the following provisions.

These criteria are contained in this book (indicating). As you will recall, there are some 200 items. These criteria will be placed in the record.

(The Report referred to follows:)

Water Quality Criteria

REPORT OF

WATER QUALITY CRITERIA

CALUMET AREA-LOWER LAKE MICHIGAN

JANUARY 14th 1966

4th Edition

WATER QUALITY CRITERIA

CALUMET AREA-LOWER LAKE MICHIGAN

INTRODUCTION

This report on the Calumet Area and Lower Lakes of Michigan is adapted from a report "Recommended Water Quality Criteria" submitted by a Technical Committee appointed in April, 1965.

A conference on pollution of the interstate waters of the Grand Calumet River, Little Calumet River, Calumet River, Wolf Lake, Lake Michigan and their tributaries (Indiana-Illinois), called by the Secretary of Health, Education, and Welfare under the provisions of Section 8 of the Federal Water Pollution Control Act (33 USC 466 et seq.), was held in Chicago, Illinois, March 2-9, 1965.

Conclusions and recommendations of the Conferees included the following items that are pertinent to this report:

> "The Conferees will establish a Technical Committee as soon as possible which will evaluate water quality criteria and related matters in the area covered by the conference and make recommendations to the Conferees within six months after the issuance of the summary of the conference."

Water Quality Criteria

> "The Indiana Stream Pollution Control Board, the Illinois Sanitary Water Board, and the Metropolitan Sanitary District of Greater Chicago, maintaining close liaison with the Technical Committee created by the Conferees will develop a time schedule for the construction of necessary industrial waste treatment facilities. Such a schedule shall be submitted to the Conferees for their consideration within six months after the issuance of the summary of this conference."

Subsequently the Conferees met on April 7, 1965 and appointed the Technical Committee which held its initial session on the same date. Since then the Committee has met at approximately two-week intervals, with most of the meetings continuing for two days.

The Committee consisted of one representative of each of the four regulatory agencies (the States of Illinois and Indiana, the Metropolitan Sanitary District of Greater Chicago, and the Federal government), two representatives of industry (U. S. Steel Corporation and American Oil Company) and one each of the City of Chicago Department of Water and Sewers, and the U. S. Department of the Interior.

GUIDE LINES FOR ADOPTING BASIC CRITERIA

At its second meeting the Committee agreed on the following guidelines for its deliberations:

"Water quality criteria for various uses will be applied to the existing situations. The criteria that are developed will recognize the existing water quality, the need for improvement of water quality in certain areas, and the possibility that criteria will not be limited by existing levels in all cases. It is realized that quality criteria set at present cannot be binding for all time but will need reconsideration and possible revision at regular intervals in the future. Water quality needs for present and potential uses will be considered. Effluent standards will not be considered by this Committee."

Considerable discussion was devoted to definition of the phrase "water quality criteria" used by the Conferees in their charge to the Committee. Relying on the usual interpretation of the word "criteria," it was concluded that the Conferees intended that limits of constituents recommended by the Committee would be used as guides in judging the suitability of water quality for various uses and in planning improvements in water quality through waste reductions where needed, but would not

necessarily be applied as standards or requirements.

BASES FOR DEVELOPMENT OF CRITERIA

After considering various bases for development of water quality criteria the Committee agreed that criteria should be based on:

1. Present and potential water uses.
2. Preservation of present good quality.
3. Improvement of degraded quality where technically and economically feasible.
4. Reconsideration and revision of regular intervals as future developments may dictate.

It was concluded that adoption of uniform criteria for specific uses, regardless of location of uses, would not provide a practical basis for a pollution abatement program for Lake waters. For example, the sheltered areas between the Calumet Harbor Breakwater and the Indiana Harbor Bulkhead (Figure 1 - Appendix) receive the major discharges from waste sources. Obviously, it is impractical to expect water of the same high quality in this area, regardless of the degree of waste treatment achieved, as that which will be found several miles out in the open Lake. If the sources of municipal supply in the sheltered area are given adequate protection, the water

in the open Lake inevitably will be of still better quality.

Based on this reasoning, the water area of the lower Lake was divided into three zones as shown in Figure 1. Most of the water area is defined as Open Water, which is that area more than 200 yards offshore and outside of a line from the outer end of the Calumet Harbor Breakwater to and along the outer edge of the Inland Steel Bulkhead Line and thence through the U. S. Steel Water Supply intake to the outer end of the Gary Harbor Breakwater. The Inner Harbor Basins is the area shoreward of the above line, but not including Shore Water. Shore Water is all water within 200 yards of shore except in the Inner Harbor Basins, where it is that water within 200 yards of existing onshore recreational areas.

(Figure 1 follows:)

LAKE CO.
COOK CO.
WINNETKA
KENILWORTH
WILMETTE
EVANSTON
SKOKIE
LAKE
MICHIGAN
N
CHICAGO
CHICAGO-DUNNE CRIB
SHORE INTAKE CRIB
ILLINOIS
MICHIGAN
ILLINOIS
INDIANA
OPEN
WATER
HAMMOND
E. CHICAGO
INTAKE
GARY-WEST INTAKE
U.S. STEEL
INTAKE
LAKE CO.
PORTER CO.
GARY
HAMMOND
LEGEND-
Control Point
Inner Harbor Line
Area Boundary
ILLINOIS
INDIANA
SCALE
0 1 2 3 4 5 Miles
LOCATION MAP
CALUMET-LOWER LAKE MICHIGAN

FIGURE 1

Water Quality Criteria

Other water bodies for which criteria were developed included the Little Calumet River, the Grand Calumet River, and Wolf Lake. The reach of the Little Calumet River involved is from the State line to the confluence with the Cal-Sag Channel. In accordance with Federal jurisdiction in interstate enforcement it was concluded that the Committee should concern itself with only those reaches of the two Rivers that are downstream from the State line in Illinois, and with that portion of Wolf Lake that lies in Illinois.

General water use categories were adopted for the development of criteria. These water uses are:

1. Municipal Water
2. Industrial Water
   Process - Cooling
3. Recreation
   a. Whole Body Contact
   b. Limited Body Contact
4. Fish and Wildlife
5. Commercial Shipping
6. Esthetics
7. Wastewater Assimilation

Existing and potential uses of the delineated bodies of water for which quality criteria were considered

are noted in Table I (Appendix). The locations of principal water uses are shown in Figures 2A and 2B (Appendix). Although there has been use of water for irrigation in the Little Calumet Basin, it has been so limited that it was concluded this very minor use did not justify special consideration.

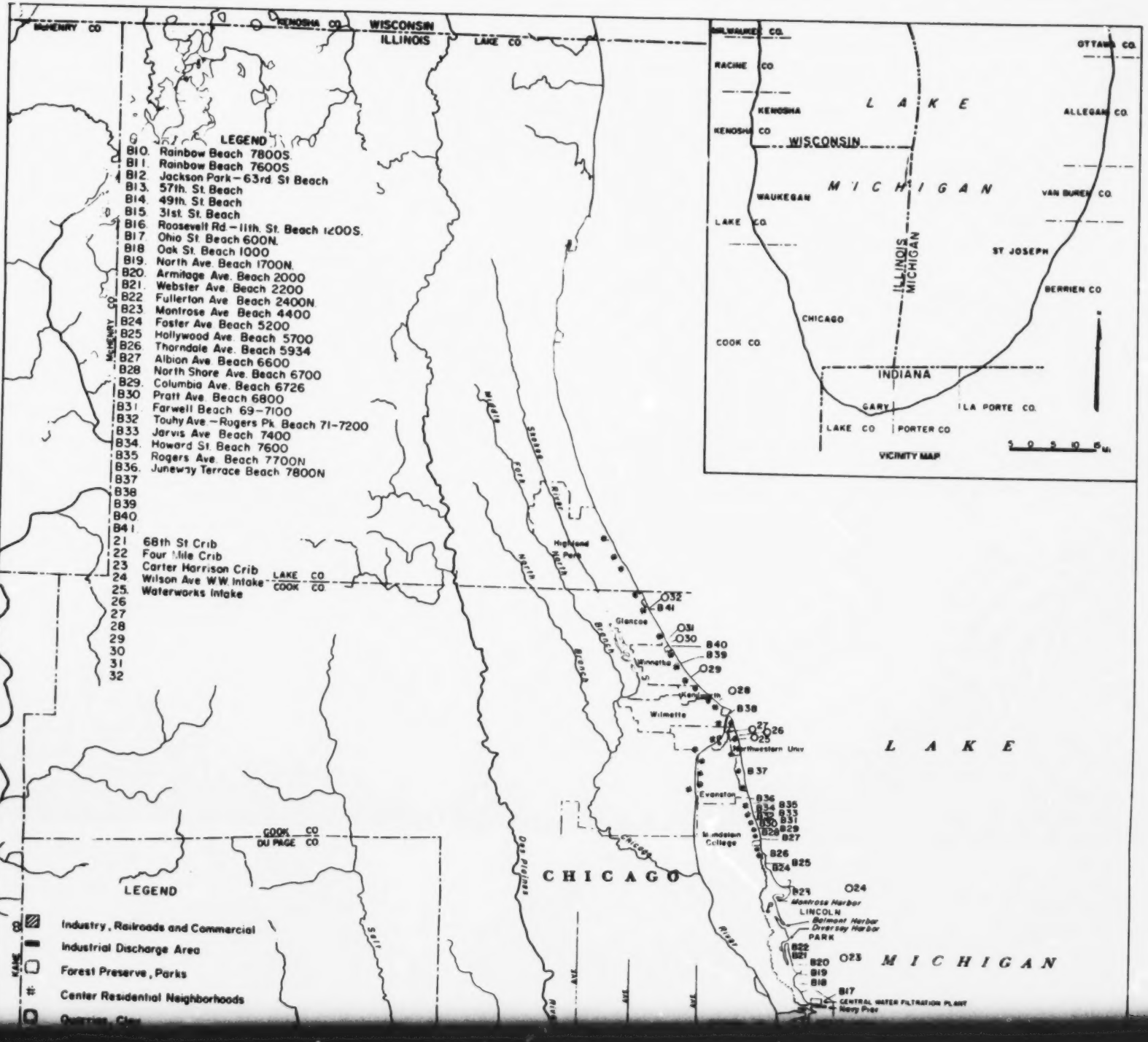
Constituents for which water quality criteria were considered for each of the bodies of water are indicated in Tables II through VI (Appendix). It should be noted that the constituents for both Open Water and the Inner Harbor Basins, given in Table II, are the same.

(Table I, Figures 2A and 2B, and Tables II through VI follow:)

TABLE I

EXISTING AND POTENTIAL WATER USES

AREA AS DEFINED / USES	Municipal Water	Industrial Water-Processing and cooling	Recreation - Whole Body Contact	Recreation - Limited Body Contact	Fish and Wildlife	Commercial Shipping	Esthetics	Wastewater Assimilation
Open Water	X	X		X	X	X	X	X
Inner Harbor Basins	X	X		X	X	X	X	X
Shore Water			X	X	X		X	X
Little Calumet River				X	O		X	X
Grand Calumet River		X					X	X
Wolf Lake			X	X	X		X	X
X - Present Use O - Future Use								


LEGEND
B10. Rainbow Beach 7800S.
B11. Rainbow Beach 7600S
B12. Jackson Park – 63rd St Beach
B13. 57th. St. Beach
B14. 49th. St. Beach
B15. 31st. St. Beach
B16. Roosevelt Rd. – 11th. St. Beach 1200S.
B17. Ohio St. Beach 600N.
B18 Oak St. Beach 1000
B19. North Ave. Beach 1700N.
B20. Armitage Ave. Beach 2000
B21. Webster Ave. Beach 2200
B22 Fullerton Ave. Beach 2400N.
B23 Montrose Ave. Beach 4400
B24 Foster Ave. Beach 5200
B25 Hollywood Ave. Beach 5700
B26. Thorndale Ave. Beach 5934
B27 Albion Ave. Beach 6600
B28 North Shore Ave. Beach 6700
B29. Columbia Ave. Beach 6726
B30 Pratt Ave. Beach 6800
B31. Farwell Beach 69–7100
B32 Touhy Ave. – Rogers Pk. Beach 71–7200
B33 Jarvis Ave. Beach 7400
B34. Howard St. Beach 7600
B35 Rogers Ave. Beach 7700N
B36. Juneway Terrace Beach 7800N
B37
B38
B39
B40
B41
21 68th St Crib
22 Four Mile Crib
23 Carter Harrison Crib
24 Wilson Ave WW Intake
25. Waterworks Intake
26
27
28
29
30
31
32
LAKE CO
COOK CO
COOK CO
DU PAGE CO
LEGEND
Industry, Railroads and Commercial
Industrial Discharge Area
Forest Preserve, Parks
Center Residential Neighborhoods
Quarries, Clay
McHENRY CO
KENOSHA CO
WISCONSIN
ILLINOIS
LAKE CO
KANE CO
Highland Park
Glencoe
Winnetka
Wilmette
Evanston
Northwestern Univ
Lindenwood College
CHICAGO
Des Plaines River
Chicago River
Montrose Harbor
LINCOLN PARK
Belmont Harbor
Diversey Harbor
CENTRAL WATER FILTRATION PLANT
Navy Pier
L A K E
M I C H I G A N
MILWAUKEE CO.
OTTAWA CO.
RACINE CO
KENOSHA
KENOSHA CO
WISCONSIN
WAUKEGAN
LAKE CO.
ALLEGAN CO.
VAN BUREN CO.
ST JOSEPH
BERRIEN CO
CHICAGO
COOK CO.
ILLINOIS
MICHIGAN
INDIANA
GARY
LA PORTE CO.
LAKE CO
PORTER CO
VICINITY MAP

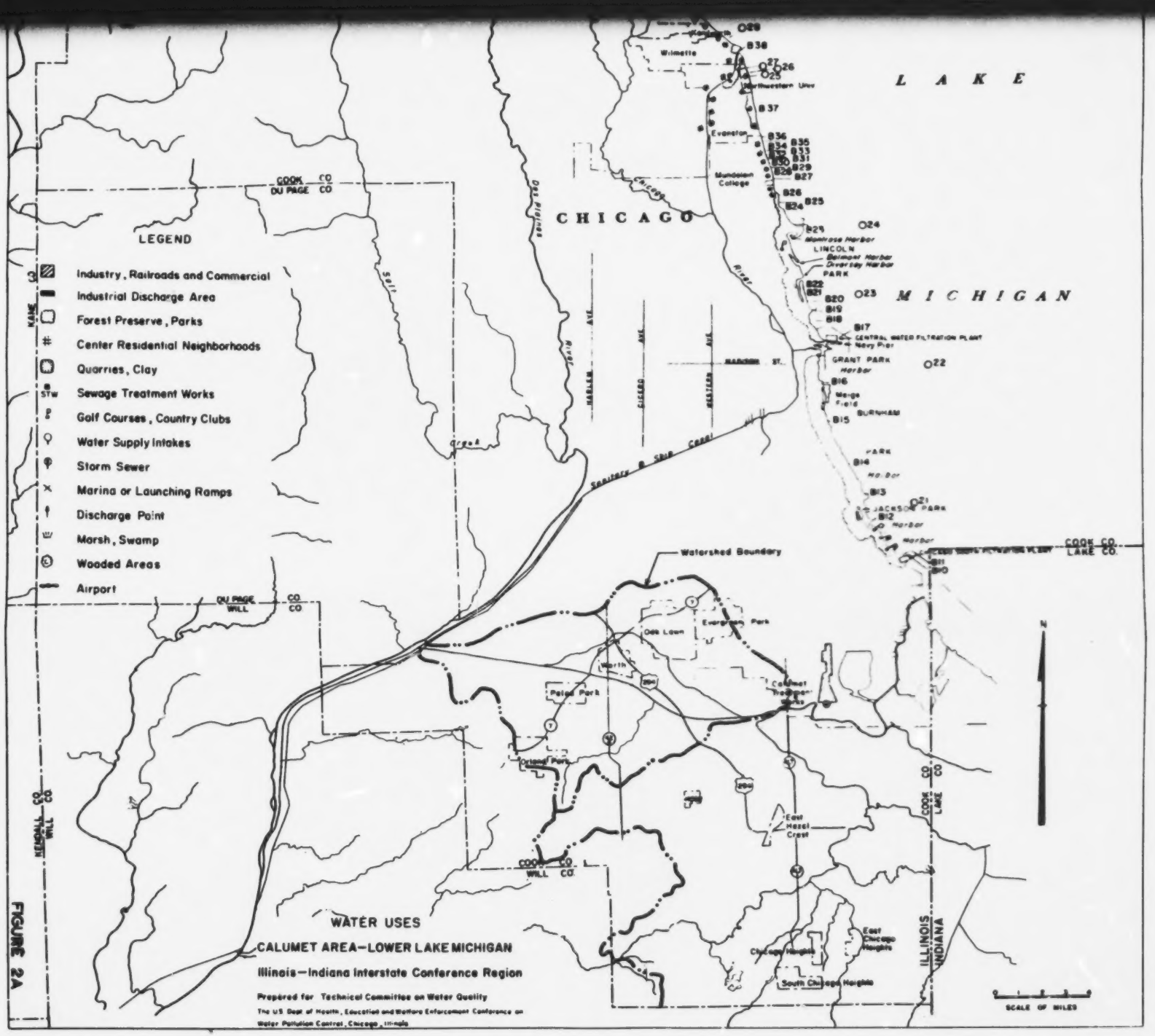


FIGURE 2A

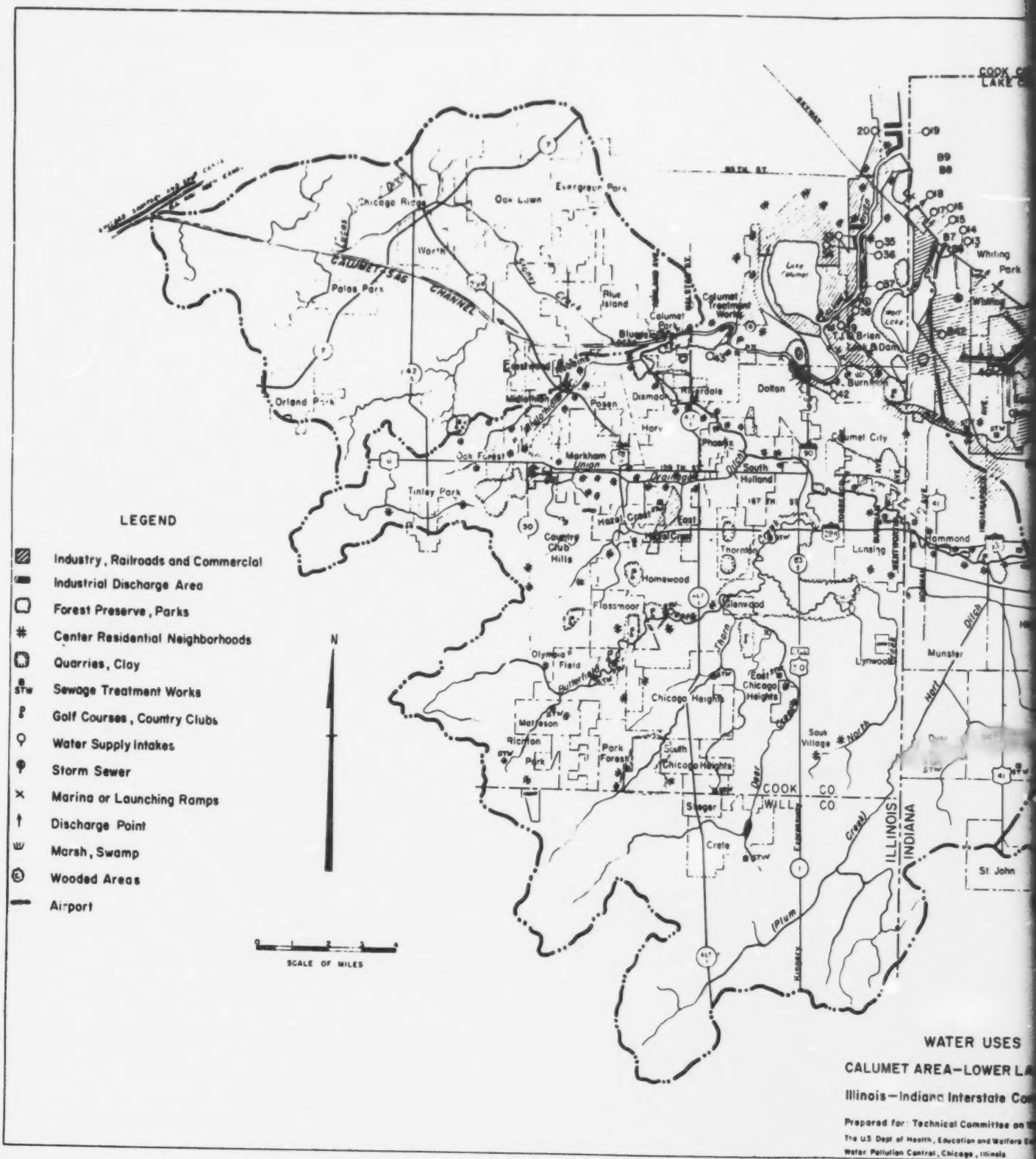
WATER USES

CALUMET AREA—LOWER LAKE MICHIGAN

Illinois—Indiana Interstate Conference Region

Prepared for Technical Committee on Water Quality

The US Dept of Health, Education and Welfare Enforcement Conference on Water Pollution Control, Chicago, Illinois



WATER USES

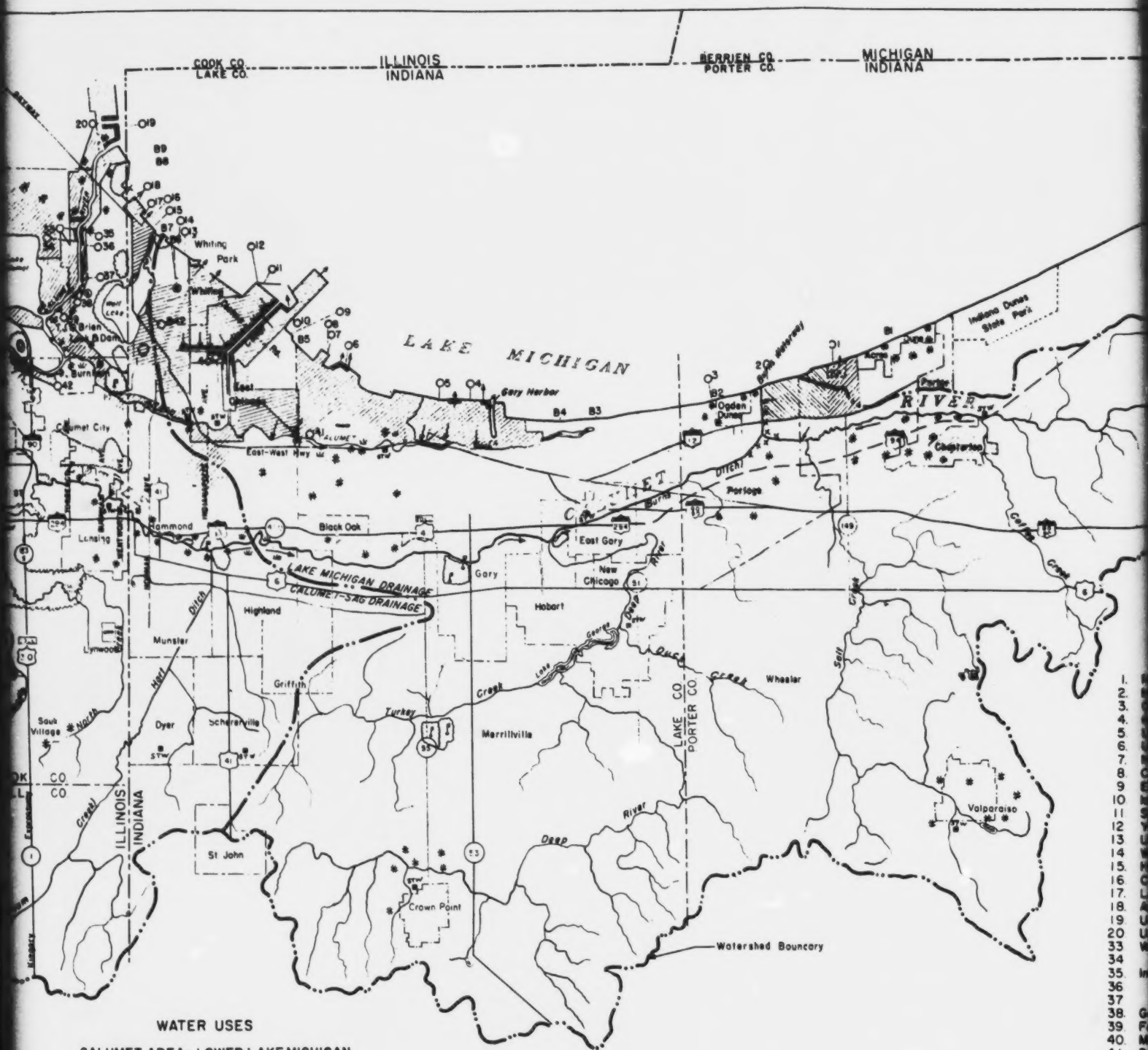
CALUMET AREA–LOWER LA

Illinois–Indiana Interstate Co

Prepared for: Technical Committee on

The U.S. Dept. of Health, Education and Welfare

Water Pollution Control, Chicago, Illinois



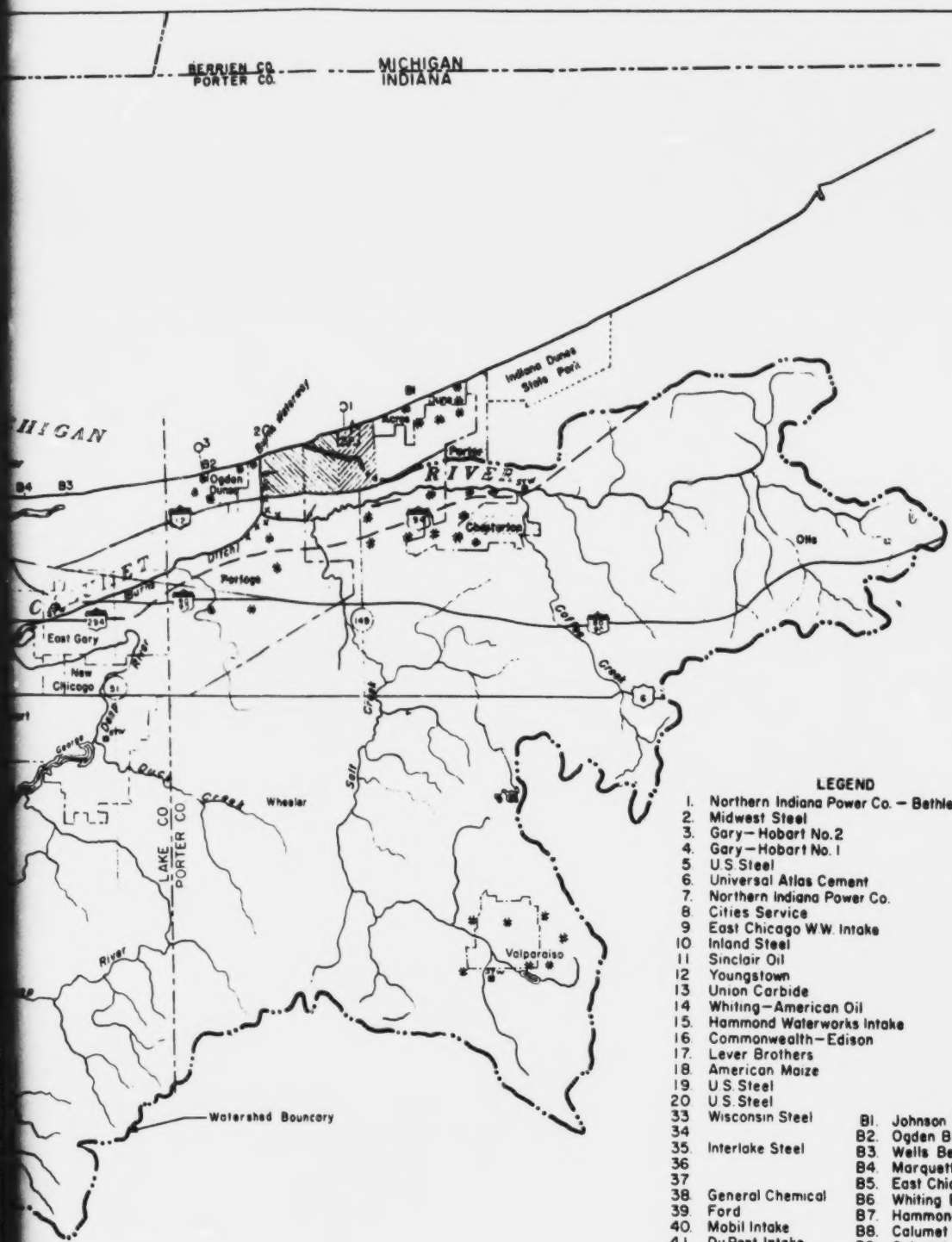
WATER USES

CALUMET AREA—LOWER LAKE MICHIGAN

Illinois—Indiana Interstate Conference Region

Prepared for: Technical Committee on Water Quality

The U.S. Dept. of Health, Education and Welfare Enforcement Conference on Water Pollution Control, Chicago, Illinois



LEGEND

1. Northern Indiana Power Co. – Bethlehem Steel
2. Midwest Steel
3. Gary–Hobart No.2
4. Gary–Hobart No. 1
5. U.S. Steel
6. Universal Atlas Cement
7. Northern Indiana Power Co.
8. Cities Service
9. East Chicago W.W. Intake
10. Inland Steel
11. Sinclair Oil
12. Youngstown
13. Union Carbide
14. Whiting–American Oil
15. Hammond Waterworks Intake
16. Commonwealth–Edison
17. Lever Brothers
18. American Maize
19. U.S. Steel
20. U.S. Steel
33. Wisconsin Steel
34.
35. Interlake Steel
36.
37.
38. General Chemical
39. Ford
40. Mobil Intake
41. DuPont Intake
42. Spencer
43. Interlake Steel

B1. Johnson Beach
B2. Ogden Beach
B3. Wells Beach
B4. Marquette Beach
B5. East Chicago Beach
B6. Whiting Beach
B7. Hammond Beach
B8. Calumet Beach 9800S.
B9. Calumet Beach 9600S.
B42. 121st St Beach – Wolf Lake

FIGURE 2B

TABLE II

CONSTITUENTS CONSIDERED FOR WATER QUALITY CRITERIA

Open Lake and Inner Harbor Basins — USES / CONSTITUENTS	Municipal Water	Industrial Water - Processing	Industrial Water - Cooling	Recreation - Whole Body Contact	Recreation - Limited Body Contact	Fish and Wildlife	Commercial Shipping	Esthetics	Wastewater Assimilation
Coliform Bacteria	X				X				
Fecal Streptococcus	X				X				
Turbidity		X	X			X		X	
Color (True)	X	X						X	
Threshold Odor Number	X								
Odor					X			X	
Temperature		X	X			X			X
Oil					X	X	X	X	
Floating Solids and Debris					X		X	X	
Bottom Deposits						X			
pH	X	X	X		X	X	X		
Dissolved Oxygen	X	X			X	X			X
BOD									X
Ammonia Nitrogen	X	X				X			
Nitrogen (Total)								X	
Meth. Blue Act. Substance	X	X			X	X		X	
Chloride	X	X							
Cyanide	X					X			
Fluoride	X								
Dissolved Iron	X								
Phenol-like Substances	X	X				X			
Sulfates	X								
Phosphates (Total)	X							X	
Filtrable Residue (Tot. D'd Solids)	X	X							
Misc. Trace Contaminants	X					X			
Radionuclides	X					X			

TABLE III

CONSTITUENTS CONSIDERED FOR WATER QUALITY CRITERIA

Shore Water USES / CONSTITUENTS	Municipal Water	Industrial Water - Processing	Industrial Water - Cooling	Recreation - Whole Body Contact	Recreation - Limited Body Contact	Fish and Wildlife	Commercial Shipping	Esthetics	Wastewater Assimilation
Coliform Bacteria				X	X				
Fecal Streptococcus				X	X				
Turbidity				X		X		X	
Color (True)				X				X	
Threshold Odor Number									
Odor				X	X			X	
Temperature				X		X			X
Oil				X	X	X		X	
Floating Solids and Debris				X	X			X	
Bottom Deposits				X		X			
pH				X	X	X			X
Dissolved Oxygen				X	X	X			X
BOD									X
Ammonia Nitrogen						X			
Nitrogen (Total)								X	
Meth. Blue Act. Substance				X	X	X		X	
Chloride									
Cyanide				X		X			
Fluoride									
Dissolved Iron									
Phenol-like Substances						X			
Sulfates									
Phosphates (Total)								X	
Filtrable Residue (Tot. D'd Solids)									
Misc. Trace Contaminants						X			
Radionuclides						X			

TABLE IV

CONSTITUENTS CONSIDERED FOR WATER QUALITY CRITERIA

Little Calumet River From State Line to Junction With Calumet Sag. Channel — USES / CONSTITUENTS	Municipal Water	Industrial Water - Processing	Industrial Water - Cooling	Recreation - Whole Body Contact	Recreation - Limited Body Contact	Fish and Wildlife	Commercial Shipping	Esthetics	Wastewater Assimilation
Coliform Bacteria					X				
Fecal Streptococcus					X				
Turbidity						X		X	
Color (True)								X	
Threshold Odor Number									
Odor					X			X	
Temperature						X			X
Oil					X	X		X	
Floating Solids and Debris					X			X	
Bottom Deposits						X			
pH					X	X			X
Dissolved Oxygen					X	X			X
BOD									X
Ammonia Nitrogen						X			
Nitrogen (Total)								X	
Meth. Blue Act. Substance					X	X		X	
Chloride									
Cyanide						X			
Fluoride									
Dissolved Iron									
Phenol-like Substances						X			
Sulfates									
Phosphates (Total)								X	
Filtrable Residue (Tot. D'd Solids)									
Misc. Trace Contaminants						X			
Radionuclides						X			

TABLE V

CONSTITUENTS CONSIDERED FOR WATER QUALITY CRITERIA

Grand Calumet River State Line to Junction with Calumet River CONSTITUENTS	Municipal Water	Industrial Water - Processing	Industrial Water - Cooling	Recreation - Whole Body Contact	Recreation - Limited Body Contact	Fish and Wildlife	Commercial Fishing	Esthetics	Wastewater Assimilation
Coliform Bacteria									
Fecal Streptococcus									
Turbidity		X	X					X	
Color (True)		X						X	
Threshold Odor Number									
Odor								X	
Temperature		X	X						X
Oil								X	
Floating Solids and Debris								X	
Bottom Deposits								X	
pH		X	X						X
Dissolved Oxygen		X							X
BOD									X
Ammonia Nitrogen		X						X	
Nitrogen (Total)								X	
Meth. Blue Act. Substance		X							
Chloride		X							
Cyanide									
Fluoride									
Dissolved Iron									
Phenol-like Substances		X							
Sulfates									
Phosphates (Total)								X	
Filtrable Residue (Tot. D'd Solids)		X							
Misc. Trace Contaminants									
Radionuclides									

TABLE VI

CONSTITUENTS CONSIDERED FOR WATER QUALITY CRITERIA

Wolf Lake — USES / CONSTITUENTS	Municipal Water	Industrial Water - Processing	Industrial Water - Cooling	Recreation - Whole Body Contact	Recreation - Limited Body Contact	Fish and Wildlife	Commercial Shipping	Esthetics	Wastewater Assimilation
Coliform Bacteria				X	X				
Fecal Streptococcus				X	X				
Turbidity				X		X		X	
Color (True)				X				X	
Threshold Odor Number									
Odor				X	X			X	
Temperature				X		X			X
Oil				X	X	X		X	
Floating Solids and Debris				X	X			X	
Bottom Deposits				X		X			
pH				X	X	X			X
Dissolved Oxygen				X	X	X			X
BOD									X
Ammonia Nitrogen						X			
Nitrogen (Total)								X	
Meth. Blue Act. Substance				X	X	X		X	
Chloride									
Cyanide				X		X			
Fluoride									
Dissolved Iron									
Phenol-like Substances						X			
Sulfates									
Phosphates (Total)								X	
Filtrable Residue (Tot. D'd Solids)									
Misc. Trace Contaminants						X			
Radionuclides						X			

Water Quality Criteria

Criteria first were selected for each constituent for each water use in each area. Once the complete tabulation of criteria for all water uses in an area had been developed, the most stringent criteria for any of the water uses were selected as the governing values for that area.

Some of the criteria recommended are at or near the lower limits of detectability of analytical procedures included in "Standard Methods for the Examination of Water and Wastewater." The Committee concludes that "Standard Methods" of analysis should be employed where applicable, but recognizes that other approved methods may be required in judging compliance with some of the criteria. For example, the Committee recommends an annual average of 0.02 mg/l and a single daily value of 0.05 mg/l of ammonia nitrogen in the open water of the Lake. The limit of detectability of this compound by the "Standard Methods" procedure may be as low as 0.03 mg/l, but reproducibility is erratic below 0.1 mg/l. However, the accepted method used by the Great Lakes-Illinois River Basins Project Laboratory has a sensitivity and precision of 0.01 mg/l.

Successful application of the criteria requires that analytical results be reproducible among the several laboratories involved in the program. A round-robin program of replicate sample analysis recommended by the

Committee has been initiated by the laboratories to ensure reproducibility of results.

A major, and probably the major, water quality problem of the area is taste and odor in municipal water supplies. The types of taste and odor most difficult and costly to control by water treatment are "chemical," or "hydrocarbon," and "medicinal," or "phenolic." Since the "Standard Method" for threshold odor is recognized as subjective rather than objective, it is especially important that every effort be exerted to ensure the maximum possible reproducibility of threshold odor results among the laboratories.

CRITERIA

The criteria recommended by the Committee are incorporated in the following tables, 1 through 6. The Committee feels that it is establishing a precedent in recommending criteria which, if attainable, will ensure the highest quality water that is reasonably feasible.

Water Quality Criteria

TABLE 1

CRITERIA

OPEN WATER

Control Points - Chicago South District Filtration Plant and Gary-West Plant Intakes

Coliform Bacteria - MPN/100 ml

Annual Average (Arithmetic)	Not more than	200
Single Daily Value or Average (1)	Not more than	2,500

Fecal Streptococci - Number/100 ml (Tentative) (2) — Not more than 25

Turbidity

No turbidity of other than natural origin that will cause substantial visible contrast with the natural appearance of the water.

True Color - Units

Annual Average	Not more than	5
Single Daily Value or Average	Not more than	15

Threshold Odor (Hydrocarbon and/or Chemical) (3)

Daily Average	Not more than	4
Single Value	Not more than	8

Odor

No obnoxious odor of other than natural origin.

Temperature - Degrees F — Not more than 85

Water Quality Criteria

Oil

Substantially free of visible floating oil.

Floating Solids and Debris

Substantially free of floating solids and debris from other than natural sources.

Bottom Deposits

Substantially free of contaminants that will: (1) adversely alter the composition of the bottom fauna; (2) interfere with the spawning of fish or their eggs; (3) adversely change the physical or chemical nature of the bottom.

pH - Units

Annual Median	Within range 8.1 - 8.4
Daily Median	Within range 7.7 - 9.0

Dissolved Oxygen - Per Cent Saturation

Annual Average	Not less than 90
Single Value	Not less than 80

Ammonia Nitrogen (N) - mg/l (4)

Annual Average	0.02
Single Daily Value or Average	0.05

Total Nitrogen (N) (4) 0.4

Methylene Blue Active Substance - mg/l

Annual Average	Not more than 0.05
Single Daily Value or Average	Not more than 0.20

Water Quality Criteria

		1965	1970	1980	1990	2000
Chlorides (CL) - mg/l						
Annual Average	Not more than	8	9	10	11	12
Single Daily Value or Average	Not more than	15 (through 1970)				
Cyanides (CN) - mg/l						
Single Value	Not more than 0.025					
Fluorides (F) - mg/l						
Annual Average	Not more than 1.0					
Single Daily Value or Average	Not more than 1.3					
Dissolved Iron (Fe) - mg/l						
Annual Average	Not more than 0.15					
Single Daily Value or Average	Not more than 0.30					
Phenol-like Substances - mg/l (Tentative) (5)						
Annual Average	Not more than 0.001					
Single Value	Not more than 0.003					
Sulfates (SO_4) - mg/l		1965	1970	1980	1990	2000
Annual Average	Not more than	23	24	26	28	30
Single Daily Value or Average	Not more than	50 (through 1970)				
Total Phosphates (PO_4) - mg/l (Tentative) (6)						
Annual Average	Not more than 0.03					
Single Daily Value or Average	Not more than 0.04					

Water Quality Criteria

Filtrable Residue (Total Dissolved Solids (mg/l)	1965	1970	1980	1990	2000
Annual Average	162	165	172	179	186
Single Daily Value or Average Not more than		200 (through 1970)			

Miscellaneous Trace Contaminants and Radionuclides

Shall not be present in concentrations that will prevent meeting PHS 1962 Drinking Water Standards after conventional treatment.

(1) If more than one sample per day is examined, the limit shall be the daily average. If only one sample per day is taken, the single value shall govern.

(2) Pending accumulation of adequate data on existing densities of Streptococcus. Probably can be lowered.

(3) The Chicago South District Filtration Plant Control Laboratory will be the reference laboratory for Threshold Odor.

(4) Tentative pending study of additional data and evaluation of potential reductions at the sources.

(5) Pending study of additional data and evaluation of potential reductions at the sources.

(6) Pending thorough determination of existing concentration in Lower Lake Michigan Conference Area.

Water Quality Criteria

TABLE 2

CRITERIA

INNER HARBOR BASINS

Control Points - Hammond and East Chicago Water Intakes

Coliform Bacteria - MPN/100 ml.

Annual Average (Arithmetic)	Not more than	2,000
Single Daily Value or Average	Not more than	5,000 (1)

Fecal Streptococci - Number/100 ml — Not more than 100

Turbidity

No turbidity of other than natural origin that will cause substantial visible contrast with the natural appearance of water.

True Color - Units

Annual Average	Not more than	5
Single Daily Value or Average	Not more than	15

Threshold Odor (Hydrocarbon and/or Chemical) Units (2)

Annual Average	Not more than	8
Single Daily Value or Average	Not more than	20

Odor

No obnoxious odor of other than natural origin.

Temperature - Degrees F — Not more than 85

Oil

Substantially free of visible floating oil.

Water Quality Criteria

Floating Solids and Debris

Substantially free of floating solids and debris from other than natural sources.

Bottom Deposits

Substantially free of muck and debris of other than natural origin.

pH - Units

Annual Median	Within range 8.0 - 8.5
Daily Median	Within range 7.5 - 9.0

Dissolved Oxygen - Per Cent Saturation

Annual Average	Not less than 80
Single Daily Value or Average	Not less than 65

Ammonia Nitrogen - mg/l (2)

Annual Average	0.05
Single Daily Value or Average	0.12

Methylene Blue Active Substance - mg/l

Annual Average	Not more than 0.10
Single Daily Value or Average	Not more than 0.30

Chlorides - mg/l

		1965	1970	1980	1990	2000
Annual Average	Not more than	16	18	20	22	24
Single Daily Value or Average	Not more than	30 (through 1970)				

Cyanides - mg/l

Single Value	Less than 0.1

Water Quality Criteria

Fluorides - mg/l

Annual Average	Not more than 1.0
Single Daily Value or Average	Not more than 1.3

Dissolved Iron - mg/l

Annual Average	Not more than 0.15
Single Daily Value or Average	Not more than 0.30

Phenol-like Substances - mg/l (Tentative) (2)

Annual Average	Not more than 0.002
Single Daily Value or Average	Not more than 0.005

Sulfates - mg/l

		1965	1970	1980	1990	2000
Annual Average	Not more than	35	36	39	42	45
Single Daily Value or Average	Not more than			75 (through 1970)		

Total Phosphates - mg/l (Tentative) (2)

Annual Average	Not more than 0.05
Single Daily Value or Average	Not more than 0.10

Filterable Residue (Total Dissolved Solids) - mg/l

		1965	1970	1980	1990	2000
Annual Average	Not more than	187	190	197	204	211
Single Daily Value or Average	Not more than			230 (through 1970)		

Water Quality Criteria

Miscellaneous Trace Contaminants and Radionuclides

Shall not be present in concentrations that will prevent meeting PHS 1962 Drinking Water Standards after conventional treatment.

(1) Except during periods of stormwater overflow when coliform should not exceed 24,000/100 ml.

(2) Tentative pending study of additional data and evaluation of potential reductions at the sources.

If more than one sample per day is examined, the limit shall be the daily average. If only one sample per day is taken, the single value shall govern.

Water Quality Criteria

TABLE 3

CRITERIA

SHORE WATER

Control Points - Existing Sampling Points at Bathing Beaches.

Bacteria - Number per 100 ml by MF Techniques (Tentative) (1)

(a) The number of bacteria shall be the Arithmetic Average of the last five consecutive sample results.

(b) Satisfactory area if MF Coliforms are less than 1000 and MF Fecal Streptococci are less than 100.

(c) Satisfactory area if MF Coliforms are from 1000 to 5000 and MF Fecal Streptococci are less than 20.

(d) A single sample result of over 100,000 Coliforms shall require immediate investigation as to the cause. Items to be considered in the judgment of cause and action to be taken include the sanitary survey, winds, currents and weather conditions.

Turbidity

No turbidity of other than natural origin that will cause substantial visible contrast with the natural appearance of water.

Water Quality Criteria

True Color - Units

Annual Average	Not more than 5
Single Daily Value or Average	Not more than 15

Odor

No obnoxious odor of other than natural origin.

Temperature - Degrees F — Not more than 85

Oil

Substantially free of visible floating oil.

Floating Solids and Debris

Substantially free of floating solids and debris from other than natural sources.

Bottom Deposits

Substantially free of muck and debris of other than natural origin.

pH - Units

Daily Median	Within range 7.0 - 9.0

Dissolved Oxygen - Per Cent Saturation

Annual Average	Not less than 90
Single Value	Not less than 80

Ammonia Nitrogen (N) - mg/l (Tentative) (2)

Annual Average	Not more than 0.05
Single Daily Value or Average	Not more than 0.12

Water Quality Criteria

Methylene Blue Active Substance - mg/l

Annual Average	Not more than 0.02
Single Daily Value or Average	Not more than 0.05

Cyanides (CN) - mg/l

Single Value	Not more than 0.025

Phenol-like Substances - mg/l (Tentative) (2) — Not more than 0.05

Total Phosphates (PO_4) - mg/l (Tentative) (3)

Annual Average	Not more than 0.03
Single Daily Average or Value	Not more than 0.04

Miscellaneous Trace Contaminants and Radionuclides

Shall not be present in concentrations that will prevent meeting the PHS 1962 Drinking Water Standards after conventional treatment.

(1) Pending evaluation of data on bathing beaches during 1965 which are now being collected.

(2) Pending study of additional data and evaluation of potential reductions at the sources.

(3) Pending thorough determination of existing concentrations in Lower Lake Michigan Conference Area. Lower limits may be desirable.

If more than one sample per day is examined, the

limit shall be the daily average. If only one sample per day is taken, the single value shall govern.

Water Quality Criteria

TABLE 4

CRITERIA

LITTLE CALUMET RIVER

Control Point - Wentworth Avenue Bridge.

Coliform Bacteria - MPN/100 ml

Maximum Value 5000 except during periods of stormwater runoff.

Fecal Streptococci - Number/100 ml

Maximum value 500 except during periods of stormwater runoff.

Turbidity

No turbidity of other than natural origin that will cause substantial visible contrast with the natural appearance of the water.

True Color - Units

Annual average not more than 25.

Single daily value or average not more than 50(1).

Odor

No obnoxious odors of other than that of natural origin.

Temperature Degrees F

Single daily value or average not more than 90.

Oil

Substantially free from visible floating oil.

Water Quality Criteria

Floating Solids and Debris

Substantially free of floating solids and debris from other than natural sources.

Bottom Deposits

Substantially free of sludge banks.

pH- Units

Annual median within range 6.5 - 9.0.

Dissolved Oxygen - mg/l

Average (May through September) not less than 4.0.

Single daily value or average not less than 2.0.

BOD - mg/l

Single daily value or average not more than 10.0.

Ammonia Nitrogen - mg/l (2)

Single daily value or average not more than 1.5.

Methylene Blue Active Substance - mg/l

Single daily value or average not more than 0.5.

Cyanides - mg/l

Single daily value or average not more than 0.025.

Phenol-like Substances - mg/l

Single daily value or average not more than 0.02.

Total Phosphates - mg/l (2)

Held for additional data analysis. (Appears to be from surface runoff.)

(1) If more than one sample per day is examined, the limit shall be the daily average. If only one sample per day is taken, the single value shall govern.

(2) Tentative pending study of additional data and evaluation of potential reductions at the sources.

Water Quality Criteria

TABLE 5

CRITERIA

GRAND CALUMET RIVER(1)

Control Point - Baltimore and Ohio Chicago Terminal Railroad Bridge.

Coliform Bacteria MPN/100 ml. (Tentative)

Maximum Value 5000 except during periods of stormwater runoff.

Fecal Streptococci - Number/100 ml

Maximum value 500 except during periods of stormwater runoff.

True Color - Units (Tentative)

Annual Average	25
Single Daily Value or Average(2)	Not more than 50

Odor

No obnoxious odors of other than that of natural origin.

Temperature - Degrees F — Not more than 90

Oil

Substantially free of visible floating oil.

Floating Solids and Debris

Substantially free of floating solids and debris from other than natural sources.

Water Quality Criteria

Bottom Deposits

Substantially free of sludge banks.

pH - Units

Annual Median	Within range 6.5 - 9.0

Dissolved Oxygen - mg/l (Tentative)

Average (May through September)	3.0
Single Daily Value or Average	Not less than 1.0

BOD - mg/l (Tentative)

Single Value	Less than 10.0

Ammonia-Nitrogen - mg/l (Tentative)

Single Value	Not more than 5.0

Methylene Blue Active Substances - mg/l (Tentative)

Single Value	Not more than 0.5

Chlorides - mg/l (Tentative)

Annual Average	75
Single Daily Value or Average	Not more than 125

Phenol-like Substances - mg/l (Tentative)

Single Value	Not more than 0.020

Total Phosphates - mg/l (Tentative)

Held for additional data analysis.

Filterable Residue (Total Dissolved Solids) - mg/l (Tentative)

Single Value	Not more than 500

Water Quality Criteria

(1) It is recognized that the Grand Calumet River at the State Line is essentially treatment plant effluent from Hammond due to the nature of the natural drainage flow.

In addition to the concentration limits, the pounds per day of each constituent shall be limited to the loads that would occur at these concentrations with a flow of 20 cfs.

Combined stormwater overflows shall be eliminated as soon as possible.

Criteria consider only existing conditions. If the proposed dam changes conditions, then the criteria should be reconsidered.

(2) If more than one sample per day is examined, the limit shall be the daily average. If only one sample per day is taken, the single value shall govern.

Water Quality Criteria

TABLE 6

CRITERIA

WOLF LAKE

Control Point - Illinois-Indiana State Line - Wolf Lake Culvert(1)

Bacteria - Number per 100 ml by MF Techniques (Tentative) (2)

(a) The number of bacteria shall be the Arithmetic Average of the last five consecutive sample results.

(b) Satisfactory area if MF Coliform are less than 1000 and MF Fecal Streptococci are less than 100.

(c) Satisfactory area if MF Coliforms are from 1000 to 5000 and MF Fecal Streptococci are less than 20.

(d) A single sample result of over 100,000 Coliforms shall require immediate investigation as to the cause. Items to be considered in the judgment of cause and action to be taken include the sanitary survey, winds, currents and weather conditions.

Water Quality Criteria

Turbidity

No turbidity of other than natural origin that will cause substantial visible contrast with the natural appearance of water.

True Color - Units

Annual Average	Not more than 5
Single Daily Value or Average	Not more than 15

Odor

No obnoxious odor of other than natural origin.

Temperature - Degrees F Not more than 85

Oil

Substantially free of visible floating oil.

Floating Solids and Debris

Substantially free of floating solids and debris from other than natural sources.

Bottom Deposits

Substantially free of muck and debris of other than natural origin.

pH - Units

Daily Median	Within range 7.0 - 9.0

Dissolved Oxygen - Per Cent Saturation

Annual Average	Not less than 90
Single Value	Not less than 80

Water Quality Criteria

Ammonia Nitrogen (N) - mg/l (Tentative (3)

Annual Average	Not more than 0.05
Single Daily Value or Average	Not more than 0.12

Methylene Blue Active Substance - mg/l

Annual Average	Not more than 0.02
Single Daily Value or Average	Not more than 0.05

Cyanides (CN) - mg/l

Single Value	Not more than 0.025

Total Phosphates (PO_4) - mg/l (Tentative) (4)

Annual Average	Not more than 0.03
Single Daily Average of Value	Not more than 0.04

(1) Criteria apply at beaches as well as at Toll Road Bridge Station.

(2) Pending evaluation of data on bathing beaches during 1965 which are now being collected.

(3) Pending study of additional data and evaluation of potential reductions at the sources.

(4) Pending thorough determination of existing concentrations in Lower Lake Michigan Conference Area. Lower limits may be desirable.

If more than one sample per day is examined, the limit shall be the daily average. If only one sample per day is taken, the single value shall govern.

Water Quality Criteria

PROCEDURES FOR APPLICATION OF CRITERIA

CONTROL POINTS

The committee recommends that the following sampling stations serve as control points to judge compliance with the recommended criteria. This recommendation is not intended to exclude sampling at such other points as may be found necessary to ensure effective pollution abatement and continuing monitoring and control of pollution.

OPEN WATER

1. Chicago South District Filtration Plant - Dunne or Shore Intake Crib, or both in combination.
2. Gary Water Intake, West.

INNER HARBOR BASINS

1. Hammond Water Intake.
2. East Chicago Water Intake.

SHORE WATER

Existing sampling points at bathing beaches.

LITTLE CALUMET RIVER

Wentworth Avenue Bridge.

GRAND CALUMET RIVER

Baltimore and Ohio Chicago Terminal Railroad Bridge.

WOLF LAKE

Culvert through Earthen Dike Road on Illinois-Indiana State line.

Water Quality Criteria

LABORATORY METHODS

Analytical methods shall adhere to the procedures approved by the Laboratory Directors representing the Illinois and Indiana pollution control agencies, the Metropolitan Sanitary District of Greater Chicago, the Chicago Bureau of Water and the Great Lakes-Illinois River Basins (GLIRB) Project.

The Technical Committee is aware of the variations in the procedures followed in determination of threshold odor by the several laboratories involved and that none adheres to "Standard Methods," and recognizes that quantitative values reported by the laboratories quite probably have little true relationship to each other. In order to place threshold odor results on a comparable basis until a uniform procedure can be adopted, the Committee recommends that all official determinations be performed by one organization, such as the Chicago South District Filtration Plant. In this way the South District Filtration Plant method would serve temporarily as a standard for reference procedure.

Recent discovery of wide variations in ammonia results obtained by four laboratories on two samples has cast some doubt on the comparability of analytical results. The program of the Laboratory Directors to achieve uniformity in methods and results should be pressed with all possible speed.

MR. STEIN (continuing): I might say that, except in possibly specialized cases where we haven't got criteria yet, except in cases where you have an exceptional situation like Tahoe or some other crater lake of that kind, as far as I know these criteria are as high as I have seen established anywhere for water quality control other than possibly for shellfish beds. These are extremely high, and I think they will clean up and preserve the Lake.

The Conferees accepted these criteria with the following provisions:

(a) These Water Quality Criteria are subject to subsequent adjustments by the Conferees when investigations or laboratory findings so justify.

(b) Laboratory techniques and methodology are to be coordinated by the Federal Water Pollution Control Administration laboratory.

2. The Conferees adopt the following maximum time schedule for control of waste discharges of industries:

Preliminary Engineering Plan Documents	Dec. 1966
Final Engineering Plan Documents	June 1967
Construction complete and facilities in operation	Dec. 1968

Such documents are to be filed in sufficient time so that they may be approved by the appropriate water pollution control agencies by the above dates.

3. The Conferees recognize modifications in this schedule may be necessary. These may include:

(a) A lesser time where the control agency having jurisdiction considers a practical method of control can be in operation prior to the time stated.

(b) In a few industries some variation from this schedule may be sought from the appropriate State and local pollution control agencies. In such cases after review the Conferees may make appropriate recommendations to the Secretary of the Department of Health, Education, and Welfare.

4. The conference is to be reconvened at the call of the Chairman to evaluate progress toward pollution control in the waters of the conference area.

If any of the Conferees has anything to add, we will call on him, or if you people have any questions to ask, we can sit up here en masse and try to answer them for a while. We will be available individually after we

adjourn here to answer your individual questions.

But does anyone have anything to say now or does anyone have a question before we break up?

QUESTION: I have a question back here, Mr. Chairman.

MR. STEIN: Would you identify yourself?

MR. RICHARD LEWIS: I am Richard Lewis from the Chicago Sun-Times.

You indicated in your opening statement that it would be some little time but not a millennium before this program was carried out, and in the printed sheet you indicate that it is agreed that construction will be completed and facilities will be in operation about two years from now.

MR. STEIN: Yes.

MR. LEWIS: My question is: Can you give us an estimate on when the Lake will be clear and on when you will be able to judge by routine tests and visual observations as to whether this program is going to work?

MR. STEIN: By the way, we will be doing that during the two-year period. You don't have to wait for the end of the construction.

I think you were here, Mr. Lewis, at the last conference. We heard, even up to now, that many of the

industries had made improvements in reducing their waste load of various substances by as much as 90 per cent. I think the city programs are going into effect this spring.

Now, the effect on the Lake, on the improvement of the Lake, should be continuous. We should be able to see by this summer the effect of the program up to now.

I think you have to always expect a little time lag, and this is just the mechanics of the way nature operates between the cessation of a discharge, or the adequate treatment of wastes, and the showing up of improvement in the watercourse. But I expect that if this program is working, we should see a steady and progressive type of improvement from now on. We are going to keep this under surveillance.

To answer your question as to how soon after December 1968 we should achieve optimum results in the maximum kind of clean-up, we have not been able to get an absolutely definitive answer on that from our scientists. That is not because they are ducking. It is much, much easier to predict the clean-up in a stream. We haven't had too much experience with lakes.

But I might say in streams we have gotten substantial clean-ups from one to three years after the work was completed.

Questions and Answers

I think here you are just going to see a spectrum of a clean-up, and I expect that these waters will be getting better and cleaner all the time from now on.

MR. LEWIS: Thank you.

MR. STEIN: Are there any further questions?

Yes?

QUESTION: What happens if, say in December of this year, you discover one or more industries don't have their preliminary plans ready? What happens if they are not meeting the time limit?

MR. STEIN: Again, I think we believe, in talking and dealing with these industries, that they are going to have their plans ready. We feel that we have given them a reasonable schedule.

But, as you know, the law is very clear. If you don't have the plans ready, then the notice of the violation is sent to the Secretary, and the next step in this is a hearing. If that doesn't work, the next step is court action.

I might say though, sir, that we have dealt with some 1,200 industries, in my experience in water pollution control, and with some of the major industries in the country, as we're dealing with here. Never once have we been to court with an industry. I don't anticipate that

here.

I anticipate that the industries will work with us very closely to get the plans ready.

Now, I do know -- and I think I speak for Mr. Klassen, who is not here, but certainly for all the Confere here and for myself -- that industry after industry has been coming in to see me, both on a formal and on an informal basis, and I am sure they are seeing the State and the District people too, making an effort to get these plans ready.

I think we all have to be realistic and logical.

I see a tremendous change in industry in doing this. Let me put it as bluntly as I can. I don't think a major steel company puts a couple of fellows on an airplane and flies them to Washington to visit with me just for a social visit. I think they mean business.

Thank you.

QUESTION: Is there any one major substance polluting the Lake, the elimination of which could enable the program to get off with a major leap?

MR. STEIN: I would not like to specify a major substance polluting the Lake. I think one of the really complicated problems that we have in the Chicago area is that we have a variety of materials polluting the Lake.

Questions and Answers

Now, there is one substance that we are grappling with at this point, and that is phosphate removal. This is a nutrient that may contribute to the premature aging or putrefaction of the Lake. While this is a substance of which we don't have that much control, you may hear a lot of talk about phosphate removal.

However, there are bacteria going into the Lake which are from human wastes. This will be stopped with disinfection in the spring. This should make a big difference.

We also have industrial wastes, and we know what they are. They are largely from the petroleum, or oil, industry and from the steel industry. Each of these wastes is fairly well cataloged. Each one of them can be troublesome. They are going to be expensive to the industry to remove.

They recognize these wastes as well as I do. I think if you want a detailed list of the wastes from the various industries, I will be glad to talk to you later.

QUESTION: In putting this together in the last few days, did you give any consideration at all to what this is going to cost industry and, secondly, to whether you might recommend some bill for Federal aid to help them build some of these facilities?

MR. STEIN: Let me answer your second question

first, because that is easy. Recommendations for legislation come from the President. And I work on legislation. That's another "halo" I wear. One of the beauties of the job I have is that, because I work on legislation and help prepare the Administration's report on legislation, I can't talk about it. (Laughter) But there have been legislative proposals for help for industry.

On the other point, these people here can tell you quite a bit about public financing. I have at least a feeling that in the administration of this law, unless an industry volunteers to us what it costs, this really is not much of our business, what the private financing is. We are interested in industry doing the job.

Very often they have reasons, either competitive reasons or financial reasons, to arrange their long-term or short-term financing in a certain way. They may not wish, for whatever reason they have, to reveal this kind of financing.

We are happy to get these figures when we can get them. However, we respect that aspect of industry. I think, if these figures are made available to us, we will collate them, and we will make them available, but I suggest any question you have on industrial costs be directed to the industry.

Questions and Answers

QUESTION: What about the State and municipality figures? Have you got those?

MR. STEIN: I think I would like each of the people to speak for himself.

QUESTION: Could we get some sort of just "boxcar" figures?

MR. STEIN: Do you have State and municipality figures to clean this up, Mr. Poston?

QUESTION: Just a round figure.

MR. POSTON: I don't have one offhand.

MR. STEIN: Grover, do you have one?

MR. GROVER COOK (Chief, Enforcement Activities, Region V, Federal Water Pollution Control Administration): No, I don't.

QUESTION: Well, Mr. Stein, just off the top of your head, would you be willing to make an estimate what both the public and private figures might be?

MR. STEIN: I am surrounded by engineers here. I would prefer they do it.

MR. POOLE: I will yield to Poston. I can't do it.

MR. STEIN: Mr. Poston, do you want to try?

MR. POSTON: I can't give a figure.

QUESTION: One million? Two million? Ten

million?

MR. STEIN: I suspect it will be more than two million.

MR. POSTON: I would say over ten million. I wouldn't say how much over.

QUESTION: Ten million for everything or just for the public bodies? We just want a round figure. Nobody is going to hold you to it.

MR. POSTON: I think Youngstown has a figure of $11 million that they gave for their own one plant.

QUESTION: Are you talking about a municipal plant or about all industries?

MR. POSTON: This is an industrial plant. This is Youngstown Sheet and Tube.

MR. STEIN: Let me say this: I can see the reluctance of these people, but I don't want to mislead you on this. I suspect a figure like $10 million is very, very low. That's not even in the ballpark.

MR. POSTON: That's right.

MR. STEIN: It's going to be considerably higher.

Do you want to give them a figure (to Mr. Poston)?

MR. POSTON: No, I'm not going to --

MR. STEIN: You once gave a figure for all the Great Lakes, didn't you?

Questions and Answers

MR. POSTON: That's easier.

MR. STEIN: Why don't you give them that figure? What did you say? This is just to give an idea of the magnitude.

MR. POSTON: We were talking about a five-year program or a ten-year program to clean up all of the pollution in the Great Lakes, that it would be something in the magnitude of $20 billion.

QUESTION: Billion?

QUESTION: Million or billion?

MR. POSTON: Billion. This is a big problem.

QUESTION: Did you say a five- or a ten-year program?

MR. POSTON: Ten-year. This would include combined sewers -- elimination of combined sewers -- and certain research needed.

MR. STEIN: Just a moment. Just to give you an idea, we have some figures here for the District alone. Colonel Chesrow probably can give those. This is just the Sanitary District.

COLONEL CHESROW: The Metropolitan Sanitary District of Greater Chicago anticipates that our present needs are close to $200 million, and our anticipated expenditures within the next ten years will be, in round figures,

approximately $400 million additional.

QUESTION: Just for this purpose alone?

COLONEL CHESROW: Yes.

QUESTION: Just for pollution control?

COLONEL CHESROW: Yes. That is for building new plants and for doing the work that is necessary to prevent pollution and for control of the pollution of Lake Michigan.

QUESTION: This is all new? This isn't something you were doing?

COLONEL CHESROW: No, no. This is new.

MR. STEIN: That is just the District.

I might give you another idea of the magnitude. I don't want to speak for this area, but this might help. I think in the future years it is pretty well agreed that when we talk in terms of "water resources" -- and don't forget we are dealing with Corps of Engineers' projects and big dams, Bureau of Reclamation dams, and so forth -- the biggest single item of expenditure in water resources is going to be for pollution control.

In other words, nationally, an item in water resources, and a major item, is going to be for pollution control.

You can, going back, just look at the amounts that we spent for dams in this country in the past. These

amounts will appear small in the future when we are going to have larger expenditures nationally for pollution control.

In other words, I don't think anyone should be misled by the notion that this is not going to be a major cost. This may very well be, after the roads program, the area of public works that is going to be the most significant in cost in the country. I think the Chicago area, having a problem like that, would have to recognize this if we are going to do the job.

Yes?

QUESTION: Mr. Stein, you spoke of secondary treatment of domestic wastes. Does that mean that you are going along with the dumping of sewage effluent into the Lake after it has been treated a second time, that that is permissible now?

MR. STEIN: The situation we have here is that Indiana puts out effluent that gets into the Lake after it is treated, or it gets into a tributary of the Lake. Isn't that correct?

MR. POOLE: That's right.

MR. STEIN: We recognize that this is a question that is before the Supreme Court, and we are a party to that case too. We take no position on that. If anyone decides

this question of discharge of effluent to the Lake or not, the Court is going to decide it.

What we are doing is taking the situation here as we find it, where these people discharge wastes into the waters, and our job is to abate it, that is, lessen it as much as possible. We are doing the best we can with that.

By the way, there are some Illinois sources that discharge into the Lake too.

QUESTION: But you are still going to allow it?

MR. STEIN: There will be no prohibition, and I don't know that we have that authority, sir. There will be no prohibition against the discharge of wastes at all into any waters of the country.

Let me again make this abundantly clear, because this is a very pertinent question, but I think you have to understand this.

One, this question right now is before the Supreme Court of the United States. We are a party to the case, as are Illinois and the other Lake States. We are going to abide, as everyone else is I'm sure, by the Court's decision.

Secondly, our law speaks in terms of "abating" pollution. Again, I am an old crossword puzzle fan. "Abate" means "diminish." That means you don't tell the people

not to put anything in at all. If we did that, then we would possibly have been given a different statutory mandate.

In other words, we find where the wastes are going, and we try to get them to do the job as best we can.

You can be sure there will be no increase of sewage going into the Lake. At the end it will be better.

QUESTION: Has the Sanitary District gone along with this abatement program?

COLONEL CHESROW: We are against all pollution going into Lake Michigan, and our stand is that we're opposed to pollution of all sorts, of any type, going into Lake Michigan.

QUESTION: Is the District planning to put sewage that has had secondary treatment into the Lake?

COLONEL CHESROW: Never. No effluent of any sort.

QUESTION: Mr. Stein, you called this a "remarkable breakthrough." Could you describe in layman's terms just what these criteria mean and what industry and the municipalities are going to be doing so as to indicate to the general public just what this is going to mean?

MR. STEIN: Yes. I think a few of the criteria can give you an indication.

One, the coliform count refers to bacteria or a

bug found in the intestines of a warm-blooded animal at water intakes. Generally speaking, it has been considered satisfactory if the count was 5,000. The count we are shooting for at the Chicago water intakes is 200.

For example, you have industries here, the petroleum industry and the steel industry, both of them, which have very vexing oil problems. The criterion here is "no visible oil discharge."

What I think we have is a cutback of pollutants to practically the irreducible minimum.

I think in all reasonable respects we are going to keep the Lake practically pure, considering the multi-millions you have living along the shores and the tremendous industry you have along the shores.

Obviously, you cannot return this to the days of Fort Dearborn or the Indians, but I think, with the criteria that we have here, some people may think we have come pretty close.

QUESTION: Is there anything major that you have compromised on, that is not in this report, that you think ought to be in it?

MR. STEIN: No. As a matter of fact, this is what I think, sir, is so remarkable, when I talk about the "remarkable breakthrough" in here.

Questions and Answers

I think that, with industry, with the localities, with the States, and with us, we have gotten a pollution control program that I do not think compromises in one respect, and I don't want to qualify this by even saying "essential" respect.

I think if you got some professor, for example, in one of the respected universities, to come up with a "blue sky" plan to clean up Lake Michigan, or if we put one of our planning staffs to work on that, they would not have come up with anything that is much different than what emerged here.

That is what I think is so remarkable.

Yes?

QUESTION: Mr. Stein, would it be premature to think that these criteria will be adopted, say, along the North Shore and up around Milwaukee where they are having problems? I am just talking about our immediate vicinity now.

MR. STEIN: I would answer that, yes, I would hope they would do something around Milwaukee where they are having problems.

Now, again, let me give you what our law provides. We can only come in, on our initiative, when pollution in one State endangers health or welfare in another State.

Obviously -- at least we think that is the situation in Milwaukee -- while this may affect the Lake generally, it is at the present time largely a Wisconsin problem. We would love to see Wisconsin get at that.

I think the fact of those Milwaukee beaches being closed is an indication that everything is not just fine around there.

If the Governor of Wisconsin should ask us to come in, we would be delighted to come in and help to try to clean that up. So far, we haven't had the invitation, and I don't know that we are holding our breath expecting it.

QUESTION: How about the North Shore, now, where you have Abbott Laboratories, Johnson Motors, etc.?

MR. STEIN: Well, again, I think that the North Shore is something that we would like to see cleaned up. That is outside the area of the case.

Again, I think it's outside your jurisdiction too, isn't it, Colonel?

COLONEL CHESROW: Yes.

MR. STEIN: We do think Mr. Klassen has a very active program. He has done a very good job in the State in cleaning up almost all areas of pollution, and, as Mr. Klassen and the rest of the Illinois people know, we stand

ready to help again.

Now, again, we cut the case off on both sides, and in Indiana too, around the Burns Ditch area in Indiana, because we had to come in on an interstate area.

I might say in Indiana, in the Burns Ditch area, the National Steel and Bethlehem are doing a superb job. In other words, there is no complaint.

I would say that the people in Indiana outside the area of the jurisdiction of the case are doing and are going to do as much as we are asking for inside the area.

I hope on the Illinois side they will do the same.

QUESTION: Mr. Stein, to your knowledge, do any other countries have this water pollution problem?

MR. STEIN: They all have. Now, I say that on the basis of experience, reports and knowledge. I don't want to talk about the other countries, because I will leave that for the State Department, in specifics.

But I have taken many trips to Alaska and Hawaii, where you are supposed not to have pollution problems, and the pollution problems that you have in the so-called remote or undeveloped areas make our problems look easy. There are tremendous problems in these areas.

Now, let me say I think this again deals with

the problem of infant mortality and the kind of life we live in this country. We're in one of the few countries where you can go to any town in the country and, with safety, turn on the faucet and drink a glass of water. I don't know that you would want to do this in any other countries.

Again, let me tell you, because I worked in these programs for many years, that in the Indian health program we discovered that the infant mortality of those Indians was many, many times what it was in the rest of the population. Of course, they had many diseases.

That has been reversed. And do you know why? We found that the big problem came when the children were weaned. Once we got the public health nurses out and had the mothers boil the nipples on the bottles, because of the kind of water supply, it completely changed the picture in infant mortality there.

Of course, then, once you do that, you see, you are living with a rising birth rate, and you begin having other problems, but at least we got them over that hurdle.

The answer to this is, I think, the essential point in our standard of living. The reason we can live the way we do is because of the quality of water we have in this country, and we have to keep it that way.

Questions and Answers

QUESTION: Mr. Stein, I am a layman, but I fail to understand why things get so bad up in Milwaukee that the beaches are closed. Why wouldn't it affect just a few miles down the shore, the North Shore, here? And how about Michigan across the Lake?

MR. STEIN: Our scientists have been working on this all the time, and, you know, I wish you'd work with us.

To go in, of course, we have to prove that pollution goes across a State line. The hardest thing you can do is trace a bug, particularly out in lake currents.

Sir, before we came here there was very little known about these lake currents. No one knew where the waters went. Sure, we can trace the bugs outside of a sewage outfall, but to trace a Wisconsin bug over a Michigan or Illinois State line is something else.

Now, our people have done a tremendous job here.

By the way, one of your distinguished Congressmen, and a man who I think ran for the Senate, Sidney Yates, was on the Appropriations Committee handling the Weather Bureau's appropriation, and he, naturally, is a very influential man at the Weather Bureau. He got us maps of the weather going back into the 1800's to try to trace currents. What the people would do is drop oranges in and

follow the oranges around and try to develop current patterns.

We found this couldn't be done, because the currents went one way on top, below that they went another place, and below that they were different. They varied, and you had to do them for a period of time.

What we did was got something like inverted Texas towers that went down into the water with electronic devices, at various levels, checking the currents. We are just beginning to get a picture of that.

The way it looks here, the lower end of Lake Michigan is a kind of self-contained cul de sac, and I am not sure that that material from Milwaukee really does get down here in viable state.

Yes?

QUESTION: Speaking of beaches, what about the beaches down around the lower end of the Lake that are closed now? Are they going to be opened?

MR. POSTON: It is anticipated that the beaches will be opened.

QUESTION: When?

MR. POSTON: June.

QUESTION: Oh, really?

MR. POSTON: Or the normal time.

Questions and Answers

QUESTION: All of them?

MR. POSTON: The Conferees came out in March a year ago with the recommendation that chlorination be installed by June of this year.

QUESTION: How many are closed now down there?

MR. POSTON: Well, Hammond. That is the only one that is closed.

QUESTION: Hammond is the only one closed?

COLONEL CHESROW: I'd like to qualify that. There is none in Illinois.

QUESTION: I understand. Hammond is the only one that is closed?

MR. POSTON: Yes.

QUESTION: We are almost out of film. Could you answer two questions, very briefly?

No. 1, by what percentage will Lake pollution be reduced from its present level with full compliance?

MR. STEIN: You are going to like the answer. I think full compliance will reduce pollution to a maximum. I would consider that, in a practical program, a hundred per cent reduction. That is, the Lake will not be pure, but you do have a polluted condition, and it will restore it to a non-polluted condition.

QUESTION: Secondly, what penalties may be invoked

against municipalities and industries which do not comply with these criteria?

MR. STEIN: We can have a public hearing or take them to court, and we have done that.

QUESTION: What penalties?

MR. STEIN: That would be up to the court to assess.

We have never had to go to trial. In the St. Joseph case, at a pretrial session, the City Attorney said, "Are you going to put us all in jail or put a padlock on the City Hall?"

The Judge said, "Well, not prejudging the case and not making any assumptions, of course, I won't do that, but I sure can dip into your till."

QUESTION: There must be some maximum penalty.

MR. STEIN: No, there is not a maximum penalty.

QUESTION: Death? (Laughter)

MR. STEIN: No, I think this is in terms of a civil offense, not a criminal offense. And the point is that you have in your experience seen people who have tried to defy Federal court orders, and what has happened to them. You don't do that. Either you become poorer or your movement is restricted, because, while it might be a civil penalty, if you don't obey a court, you are in contempt of

court.

QUESTION: The court could levy a fine?

MR. STEIN: They could levy a fine, or, if you are in contempt of court, they can lock you up, I assume.

QUESTION: Mr. Stein, what did you mean when you said that the honeymoon for industry is over?

MR. STEIN: Did I say it here?

QUESTION: You were quoted on the wires as saying that.

MR. STEIN: Specifically in relation to what?

QUESTION: In reference to water pollution in lower Lake Michigan. Did that illustrate, for instance, that industry had not been cooperating with you, or what?

MR. STEIN: I don't recall that. I'm not saying I didn't say that. But the point is I don't know that we have ever had a honeymoon with industry. As a matter of fact, I think the honeymoon with industry is beginning. You can quote me on that. Because I think we're getting along with industry very well, and we're going ahead with a cooperative, joint program to clean up Lake Michigan.

If I described the situation that we had with industry before as a "honeymoon," it wasn't very apt.

QUESTION: Could you describe, say, three key things that industry is going to be doing now, in layman's

terms, that they haven't been doing?

MR. STEIN: I don't know that it is three. One major thing is to keep the maximum wastes out.

What they will be doing -- and I don't want to underestimate this -- is installing housekeeping facilities. The best way you can keep a pollutant out is to keep it out of the pipes. Once you get it in the pipes, you have to treat it, and you have a problem. If you can keep it out in the process, not let it get into those wastepipes, you are that far ahead.

The second thing industry will be doing is constructing, installing and maintaining collection and treatment systems for all the wastes that they can't possibly keep out. They will have to reduce them to the maximum practicable limit, within the scope of the criteria and the objectives.

The third thing they will have to do, of course, is keep an accurate surveillance program, or someone will have to keep an accurate surveillance program, to see how this is working.

QUESTION: Will you be keeping a surveillance program?

MR. STEIN: We will be working with the State and local government to keep a surveillance program. We would

hope the States and local agencies would absorb as much of that as possible.

But, as I pointed out, a surveillance program will be accomplished, and it will be done, whether we have to do this ourselves or not. In other words, we are underwriting it.

Again, let me make this key point with this, because none of these facilities is worth very much unless they are operated, speaking of the municipal facilities, seven days a week, 365 days a year. With the industrial facilities, if they are open around the clock, that's when they have to be operated.

There is no point, for example, in having a beautiful water facility in Chicago that doesn't give you clear, good, potable water 365 days a year, 24 hours a day.

By the same token, there is no point in putting in all these installations unless they work around the clock, because the waters will get polluted if they don't.

If you want to go to many large cities, particularly in the Eastern half of the country, and ask me where the major pollution discharge sources are, I will take you to the discharge points of the sewers and the industrial waste treatment plants.

In other words, they have to work, and we have

to recognize that you are going to have to have an adequate, continuous surveillance operation.

Now, let me again take one more second on that. If your electric utility doesn't work or your gas or your telephone doesn't work, you know it immediately, and you get customer response. We have no built-in protection like that with water pollution control facilities. The people don't know it. It's insidious. The only way you can do that is to have automatic monitoring, with check-ups, and to have our scientists out there all the time to see that the system is operating at its optimum capacity.

QUESTION: When you get it cleaned up, how much dirtier will the Lake be than when the Indians were here? You said it won't be absolutely pure.

MR. STEIN: I don't know how much. I think very little.

In other words, I would hope, when we got these Lakes cleaned up, particularly Lake Michigan, that we would be able to utilize these Lakes for all the water uses for which the Lakes were capable of being utilized when the Indians were here. I would hope that we would be able to support the same biota and the same kind of fish it could support when the Indians were here, and I think that's doing pretty well.

Questions and Answers

QUESTION: Will you have time for individual interviews, Mr. Stein?

MR. STEIN: Yes. I am available all day.

MR. JOSEPH CHANTIGNEY (Chairman of the Great Lakes Region for the Izaak Walton League of America): Mr. Chairman, my name is Joseph Chantigney. I am representing the Izaak Walton League of America and also the Cook County Clean Streams Committee.

I have prepared a brief statement on behalf of both organizations, and I want to know, and ask in Mr. Chesrow's presence, if we could have this entered into the record today.

MR. STEIN: Yes. We will place that in the record as if read.

Joseph Chantigney

STATEMENT OF JOSEPH CHANTIGNEY,
CHAIRMAN OF THE GREAT LAKES REGION,
IZAAK WALTON LEAGUE OF AMERICA, AND
GENERAL VICE-CHAIRMAN, COOK COUNTY
CLEAN STREAMS COMMITTEE

MR. CHANTIGNEY: My name is Joseph Chantigney. I am Chairman of the Great Lakes Region for the Izaak Walton League of America. I am here today to present the views of the Izaak Walton League's entire membership.

I would like to start my comments by saying we welcomed the Federal hearing held March 2, 1965, which eventually led to the signing of the new water pollution bill by President Johnson, and which became effective October 2, 1965.

President Johnson showed his concern and sincerity when he said, and I quote: "No one has a right to use America's waterways -- that belong to all the people -- as a sewer." We of the League were heartened and encouraged by this statement.

When the Izaak Walton League was organized, they had the foresight to see what a hazard pollution was in any form. Soon afterward, they advocated legislation to control all pollution on coastal and inland waters. I would like

to emphasize the fact that the Izaak Walton League has been fighting in every conceivable way for 44 years to prevent water pollution.

I would like to quote from a speech Senator Paul Douglas delivered on January 15, 1966 at the 44th Annual Founder's Day Dinner of the Izaak Walton League of America:

> "Throughout the Nation and in Washington, D. C. as well, the League was in the forefront of the campaign to alert the people to the problems of pollution and to secure enactment of enforcement legislation. There can be no doubt that the decades of work by hundreds of Izaak Walton League chapters across the country laid the groundwork for public insistence that effective action be taken by the Federal government. Without the work of the League on the local and State levels, this overdue public concern would still be largely unnoticed."

I attended the two-day session on Water Quality Criteria held in the Prudential Building on January 4 and 5, 1966. I want to say it was most encouraging to hear the tremendous reduction in water pollution some of our large industries have accomplished since the original hearing. I would like to publicly compliment Wisconsin Steel Company.

Through my own work as General Vice-Chairman of

the Cook County Clean Streams Committee, I have been informed that their overall program calls for the complete elimination of all outfalls. This, in my opinion, is the ultimate in water pollution abatement. Knowing what Wisconsin Steel's program is, I must express grave disappointment in some of our other industries, who do not appear to be trying to attain this goal.

At this point I would like to give our views on the Water Quality Criteria. We are pleased to have these standards set up, but we feel that these standards still fall far short of fulfilling this Nation's health and recreational needs. If the end results will produce water of a quality for fishing and water contact sports, then the Izaak Walton League of America, which is pledged to defend all of this Nation's natural resources, will feel that the thousands of Izaak Walton League members who have worked so diligently and voluntarily for more than 44 years will not have strived in vain.

We of the Izaak Walton League of America wish to thank you for this opportunity to present and express our views here today.

MR. STEIN: Are there any other further questions or comments?

(No response.)

If not, Colonel Chesrow, Mr. Poston, Mr. Poole and the technical staff -- and I ask them to stay with me -- will be available for comments.

I might say to you fellows from the press that this is your chance. Looking around the room, I see we have got more top scientists in here from various levels of government and industry than I have seen assembled in one place for a long time. So here's your chance to ask your questions.

Thank you for coming.

(Whereupon, at 10:05 a.m., the meeting was adjourned.)

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U. S. GOVERNMENT PRINTING OFFICE: 1972—722-127/111